

ABSTRACT

A method and apparatus for adaptively configuring an array of voltage transformation modules is disclosed. The aggregate voltage transformation ratio of the adaptive array is adjusted to digitally regulate the output voltage for a wide range of input voltages. An integrated adaptive array having a plurality of input cells, a plurality of output cells, or a plurality of both is also disclosed. The input and output cells may be adaptively configured to provide an adjustable transformer turns ratio for the adaptive array or in the case of an integrated VTM, an adjustable voltage transformation ratio for the integrated VTM. A controller is used to configure the cells and provide digital regulation of the output. A converter having input cells configured as a complementary pair, which are switched out of phase, reduces common mode current and noise. Series connected input cells are used for reducing primary switch voltage ratings in a converter and enabling increased operating frequency or efficiency.

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